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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,232	09/09/2003	Hiroshi Shingai	P24175	8832

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EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/657,232	SHINGAI ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5 and 7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The response of the applicant has been made of record and given careful consideration. The rejections over claims 3 and 6, where the reference doe not include a disclosure of the use of Mn in the recording layer are withdrawn. Reponses to the arguments of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1,2,4 and 5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for MgInSbTeGe having the recited c/a as discussed at [0049] in the prepub of the instant application, the range for MnTeSb is from 2.558 to 2.626 as discussed at [0045] of the prepub. and does not reasonably provide enablement for media metting this requirement in the absence of Ge and In. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Doing this would also reduce the number of rejections and obviate any issues with Shingai et al. '105 or 689, which might arise.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1,2,4 and 5 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Suzuki et al. JP-2003-237230.

See the media of sample 1, in $Mn_5Ge_4Sb_{73}Te_{18}$ in table 3. The addition of In Al, Ag, Dy and Se in amounts of less than 10% is disclosed as increasing the sensitivity. [0009]. The examiner notes that the recited X ray diffraction bands are due to Mn-Sb.

It is not clear if the presence of the Ge is sufficient to cause the formation of the A7 crystal with c/a ratio recited. The examiner holds that either the 4% of Ge is sufficient and the limitations of the claims are met or alternatively, it would have been obvious to add In in amounts of up to 10% to increase the sensitivity as discussed at [0009], which would inherently result in an A7 crystal with the recited c/a. The examiner notes the similarity of the compositions of the prior art and the instant specification.

This rejection could be obviated by requiring at least 9.3% Mn based upon the sixth embodiment. The applicant merely includes a statement rephrasing the claim that the limitations are not all met. The examiner has a basis due to the similarity of the compositions of

the instant specification and the prior art to assert the inherent presence of the recited crystal structure.

7. Claims 1,2,4,5 and 7 are rejected under 35 U.S.C. 103(a) as obvious over Suzuki et al. JP-2003-237230.

. The examiner holds that it would have been obvious to add In in amounts of up to 10% to increase the sensitivity as discussed at [0009], which would inherently result in an A7 crystal with the recited c/a. The examiner notes the similarity of the compositions of the prior art and the instant specification. .

8. Claims 1,2,4 and 5 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Harigaya et al. EP 12609783.

See the media of samples 1-15, in MnGeSbTe in table 1.

This rejection could be obviated by requiring at least 9.3% Mn based upon the sixth embodiment. The applicant merely includes a statement rephrasing the claim that the limitations are not all met. The examiner has a basis due to the similarity of the compositions of the instant specification and the prior art to assert the inherent presence of the recited crystal structure.

9. Claims 1,2,4 and 5 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Harigaya et al. '346.

See the media of samples 1-15, in MnGeSbTe in table 1.

This rejection could be obviated by requiring at least 9.3% Mn based upon the sixth embodiment. The applicant merely includes a statement rephrasing the claim that the limitations are not all met. The examiner has a basis due to the similarity of the compositions of

the instant specification and the prior art to assert the inherent presence of the recited crystal structure.

10. Claims 1,2,4,5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001), in view of Tominaga et al. '012.

Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001). See the entire document. This composition has an A7 structure as discussed in table I and section III, where when the temperature is 723 K is has a c/a of 2.649.

Tominaga et al. '012 teach $Ag_{3-13}In_{2-8}Sb_{45-87}Te_{8-34}$ which have less than 5% of additives, such as Ti, Zr, Hf, V, Nb, Ta,W, Mo and/or Mn added to them to improve reliability and other properties (2/59-62 and 3/15-21,3/30-54)

It would have been obvious to one skilled in the art to modify the $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ composition of Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001) by adding at least a small amount of Mn to improve the reliability and such as taught by Tominaga et al. '012 and heating it to 723 K with a reasonable expectation of maintaining the A7 crystallographic structure. The examiner notes that the recited x ray diffraction bands are due to Mn-Sb.

The A7 crystal structure is shown in the primary reference and the addition of a trace amount of Mn would not be expected to disturb this, please note also the c/a of 2.649 at 723 K.

This rejection could be obviated by requiring at least 9.3% Mn based upon the sixth embodiment. The basismotivation for the addition of adding any of these elements is taught, the number exemplified is small and there is no teachings way, therefore one skilled in the art would be directed to choose Mn with a reasonable expectation of gaining the advantages ascribed to this.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

08/22/2006